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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/967,121	09/28/2001	Peter Strong	008A.0002.U1(US)	7869

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EXAMINER

CLEARY, THOMAS J

ART UNIT	PAPER NUMBER
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2111

DATE MAILED: 05/03/2004

8

Please find below and/or attached an Office communication concerning this application or proceeding.

SL

Office Action Summary

Application No.

09/967,121

Applicant(s)

STRONG, PETER

Examiner

Thomas J. Cleary

Art Unit

2111

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 12-15, 19-26 and 30 is/are rejected.
- 7) ☒ Claim(s) 9-11, 16-18, 27-29 and 31-33 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4, 6.
- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date 8.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: See Continuation Sheet.

Continuation of Attachment(s) 6). Other: Copy of claims as originally filed.

Interview Summary	Application No. 09/967,121	Applicant(s) STRONG, PETER	
	Examiner Thomas J. Cleary	Art Unit 2111	

All participants (applicant, applicant's representative, PTO personnel):

(1) Thomas J. Cleary - USPTO. (3) _____.

(2) Tracy Mangilocci - Harrington and Smith. (4) _____.

Date of Interview: 26, 27 April 2004.

Type: a) ☒ Telephonic b) ☐ Video Conference
c) ☐ Personal [copy given to: 1) ☐ applicant 2) ☐ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☒ No.
If Yes, brief description: _____.

Claim(s) discussed: N/A.

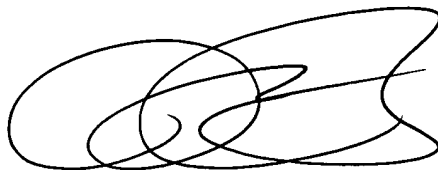
Identification of prior art discussed: N/A.

Agreement with respect to the claims f) ☐ was reached. g) ☐ was not reached. h) ☒ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: Examiner will attach a copy of the claims as originally filed with the next Office Action.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.



MARK H. WICKHAM
SUPERVISOR PATENT EXAMINER
TECHNOLOGY CENTER 2100

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Examiner's signature, if required

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

DETAILED ACTION

Claim Objections

1. Claims 9, 10, 11, 16, 17, 18, 27, 28, 29, 31, 32, and 33 objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 12 and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language.

This claim is an omnibus type claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 3, 7, 8, 13, 14, 15, 19, and 20, are rejected under 35 U.S.C. 103(a) as being unpatentable over UK Patent Application Publication 2,314,487 to International Business Machines Corporation ("IBM") and US Patent Number 5,916,287 to Arjomand et al. ("Arjomand").

6. In reference to Claim 1, IBM teaches a method of transmission of data messages between a plurality of stations (See Page 1 Lines 5-6); wherein each said message includes a frame portion (See Page 5 Lines 37-39) representing content (See Page 6 Lines 30-38) and priority information (See Page 6 Line 40 – Page 7 Line 3) of the data message and a data portion representing data to be transmitted (See Figure 1, Abstract, and Page 12 Lines 34-35); the method comprising the steps of causing at least one said station to transmit a data message on to the bus line such that said frame portion thereof is transmitted at a first data transmission rate (See Page 12 Line 35), and the data portion thereof is transmitted at a second data transmission rate not less than said first data transmission rate (See Page 12 Line 36), and adjusting said first and/or second data transmission rate in dependence on a signal quality determined for transmission on said bus line (See Page 14 Lines 1-3). IBM does not teach that the plurality of stations are interconnected by a bus line. Arjomand teaches connecting

devices together using an IEEE 1394 bus instead of a wireless connection (See Column 3 Lines 43-53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the data transmission method of IBM on a system connecting devices together using a bus instead of a wireless connection of Arjomand, resulting in the invention of Claim 1, because wireless circuitry is expensive, has a slower data rate than wired connections, and are susceptible to radio noise and interference (See Column 2 Lines 58 – Column 3 Line 20 of Arjomand).

7. In reference to Claim 2, IBM and Arjomand teach the limitations as applied to Claim 1 above. IBM further teaches causing at least one further station to transmit onto the bus line an acknowledgement signal indicating receipt of a said data message (See Page 5 Lines 13-15).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the data transmission method of IBM on a system connecting devices together using a bus instead of a wireless connection of Arjomand, resulting in the invention of Claim 2, because wireless circuitry is expensive, has a slower data rate than wired connections, and are susceptible to radio noise and interference (See Column 2 Lines 58 – Column 3 Line 20 of Arjomand).

8. In reference to Claim 3, IBM and Arjomand teach the limitations as applied to Claim 2 above. IBM further teaches causing at least one said station to transmit a

further said data message in response to transmission of a said acknowledgement signal (See Page 5 Lines 12-20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the data transmission method of IBM on a system connecting devices together using a bus instead of a wireless connection of Arjomand, resulting in the invention of Claim 2, because wireless circuitry is expensive, has a slower data rate than wired connections, and are susceptible to radio noise and interference (See Column 2 Lines 58 – Column 3 Line 20 of Arjomand).

9. In reference to Claim 7, IBM and Arjomand teach the limitations as applied to Claim 1 above. IBM further teaches determining the frequency of received data messages comprising an error and adjusting said first and/or second data transmission rate in dependence on the frequency of received data messages comprising an error (See Page 9 Lines 23-24).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the data transmission method of IBM on a system connecting devices together using a bus instead of a wireless connection of Arjomand, resulting in the invention of Claim 7, because wireless circuitry is expensive, has a slower data rate than wired connections, and are susceptible to radio noise and interference (See Column 2 Lines 58 – Column 3 Line 20 of Arjomand).

10. In reference to Claim 8, IBM and Arjomand teach the limitations as applied to Claim 7 above. IBM further teaches determining the signal to noise ratio (SNR), which is equivalent to the received signal strength, for a data message and adjusting said first and/or second data transmission rate in dependence on said received signal strength determination in combination with said frequency of received data messages comprising an error (See Page 9 Lines 23-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the data transmission method of IBM on a system connecting devices together using a bus instead of a wireless connection of Arjomand, resulting in the invention of Claim 7, because wireless circuitry is expensive, has a slower data rate than wired connections, and are susceptible to radio noise and interference (See Column 2 Lines 58 – Column 3 Line 20 of Arjomand).

11. In reference to Claim 13, IBM teaches an apparatus for transmitting data messages between a plurality of stations (See Page 1 Lines 5-6); each of said data messages including a frame portion (See Page 5 Lines 37-39) representing content (See Page 6 Lines 30-38) and priority information (See Page 6 Line 40 – Page 7 Line 3) of the data message and a data portion representing data to be transmitted (See Figure 1, Abstract, and Page 12 Lines 34-35); the apparatus comprising: means for transmitting a data message on said bus line such that said frame portion thereof is transmitted at a first data transmission rate (See Page 12 Line 35), and said data portion thereof is transmitted at a second data transmission rate not less than said first

data transmission rate (See Page 12 Line 36); and means for adjusting at least one of said first data and/or second data transmission rate in dependence on a signal quality determined for transmission on said bus line (See Page 14 Lines 1-3). IBM does not teach that the plurality of stations are interconnected by a bus line. Arjomand teaches connecting devices together using an IEEE 1394 bus instead of a wireless connection (See Column 3 Lines 43-53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the data transmission apparatus of IBM on a system connecting devices together using a bus instead of a wireless connection of Arjomand, resulting in the invention of Claim 13, because wireless circuitry is expensive, has a slower data rate than wired connections, and are susceptible to radio noise and interference (See Column 2 Lines 58 – Column 3 Line 20 of Arjomand).

12. In reference to Claim 14, IBM and Arjomand teach the limitations as applied to Claim 13 above. IBM further teaches means responsive to receiving a data message to transmit an acknowledgement signal on said bus line (See Page 5 Lines 13-15).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the data transmission apparatus of IBM on a system connecting devices together using a bus instead of a wireless connection of Arjomand, resulting in the invention of Claim 14, because wireless circuitry is expensive, has a slower data rate than wired connections, and are susceptible to radio noise and interference (See Column 2 Lines 58 – Column 3 Line 20 of Arjomand).

13. In reference to Claim 15, IBM and Arjomand teach the limitations as applied to Claims 13 and 14 above. IBM further teaches means responsive to an acknowledgement signal to transmit a further said data message (See Page 5 Lines 12-20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the data transmission apparatus of IBM on a system connecting devices together using a bus instead of a wireless connection of Arjomand, resulting in the invention of Claim 15, because wireless circuitry is expensive, has a slower data rate than wired connections, and are susceptible to radio noise and interference (See Column 2 Lines 58 – Column 3 Line 20 of Arjomand).

14. In reference to Claims 19 and 20, IBM and Arjomand teach the limitations as applied to Claim 13 above. IBM further teaches means for determining whether a data message comprises an error, wherein said means for determining whether a data message comprises an error including a Cyclic Redundancy Checker (See Figure 1 and Page 7 Lines 9-16).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the data transmission apparatus of IBM on a system connecting devices together using a bus instead of a wireless connection of Arjomand, resulting in the inventions of Claims 19 and 20, because wireless circuitry is expensive,

has a slower data rate than wired connections, and are susceptible to radio noise and interference (See Column 2 Lines 58 – Column 3 Line 20 of Arjomand).

15. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over IBM and Arjomand as applied to Claims 2 and 3 above, and further in view of US Patent Number 5,448,561 to Kaiser et al. ("Kaiser").

In reference to Claim 4, IBM and Arjomand teach the limitations as applied to Claims 2 and 3 above. IBM and Arjomand do not teach retransmitting a said message if no acknowledgment signal is received. Kaiser teaches a system that retransmits a message if an acknowledgment signal is not received (See Column 6 Lines 44-47).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of IBM and Arjomand with the acknowledgment signal usage of Kaiser, resulting in the invention of Claim 4, in order to improve fault-tolerance by insuring that the data sent has been received correctly (See Column 6 Lines 39-44 of Kaiser).

16. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over IBM, Arjomand, and Kaiser as applied to Claim 4 above, and further in view of US Patent Number 6,157,935 to Tran et al. ("Tran").

17. In reference to Claim 5, IBM, Arjomand, and Kaiser teach the limitations as applied to Claim 4 above. IBM, Arjomand, and Kaiser do not teach generating an error message prior to re-transmission of said message. Tran teaches sending a time-out message indicating that the receiver did not acknowledge receipt of the message (See Column 8 Lines 60-66).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of IBM, Arjomand, and Kaiser with the time-out message of Tran, resulting in the invention of Claim 5, in order to provide an indication to the user that the receiver did not timely acknowledge receipt of the message (See Column 8 Lines 60-66 of Tran).

18. In reference to Claim 6, IBM, Arjomand, Kaiser, and Tran teach the limitations as applied to Claim 5 above. IBM further teaches making a rate selection (equivalent to adjusting the data transmission rate) based on counting the number of errors that occur (See Page 9 Lines 23-24).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of IBM, Arjomand, and Kaiser with the time-out message of Tran, resulting in the invention of Claim 6, in order to provide an indication to the user that the receiver did not timely acknowledge receipt of the message (See Column 8 Lines 60-66 of Tran).

19. Claims 21, 22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over IBM and Arjomand as applied to Claims 13, 19, and 20 above, and further in view of US Patent Number 6,385,210 to Overberg et al. ("Overberg").

20. In reference to Claim 21, IBM and Arjomand teach the limitations as applied to Claim 20 above. IBM and Arjomand do not teach an error register for holding a value indicative of the level of received messages comprising an error, and means for decrementing said value for a received data message determined not to comprise an error and incrementing said value for a received data message determined to comprise an error. Overberg teaches an error counter in which the value is incremented when a message is not properly received and decremented when a message is properly received (See Column 7 Lines 20-23).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of IBM and Arjomand with the error counter of Overberg, resulting in the invention of Claim 21, in order to allow faulty nodes on a bus to be taken off the bus and not communicated with, thus preventing said faulty nodes from disrupting communication on the bus (See Column 7 Lines 23-28 of Overberg).

21. In reference to Claim 22, IBM, Arjomand, and Overberg teach the limitations as applied to Claims 13, 19, 20, and 21 above. IBM further teaches measuring the signal

to noise ratio (SNR), which is equivalent to the received signal strength, for a received data message (See Page 9 Lines 23-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of IBM and Arjomand with the error counter of Overberg, resulting in the invention of Claim 22, in order to allow faulty nodes on a bus to be taken off the bus and not communicated with, thus preventing said faulty nodes from disrupting communication on the bus (See Column 7 Lines 23-28 of Overberg).

22. In reference to Claim 24, IBM, Arjomand, and Overberg teach the limitations as applied to Claim 21 above. IBM further teaches making a rate selection (equivalent to adjusting said first and/or second data transmission rate) based on counting the number of errors that occur (See Page 9 Lines 23-24).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of IBM and Arjomand with the error counter of Overberg, resulting in the invention of Claim 24, in order to allow faulty nodes on a bus to be taken off the bus and not communicated with, thus preventing said faulty nodes from disrupting communication on the bus (See Column 7 Lines 23-28 of Overberg).

23. In reference to Claim 25, IBM, Arjomand, and Overberg teach the limitations as applied to Claim 23 above. IBM further teaches making a rate selection (equivalent to

adjusting said first and/or second data transmission rate) based on the signal to noise ratio (SNR), which is equivalent to the received signal strength, for a received data message (See Page 9 Lines 23-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of IBM and Arjomand with the error counter of Overberg, resulting in the invention of Claim 25, in order to allow faulty nodes on a bus to be taken off the bus and not communicated with, thus preventing said faulty nodes from disrupting communication on the bus (See Column 7 Lines 23-28 of Overberg).

24. In reference to Claim 26, IBM, Arjomand, and Overberg teach the limitations as applied to Claims 24 and 25 above. IBM further teaches making a rate selection (equivalent to adjusting said first and/or second data transmission rate) based on the signal to noise ratio (SNR), which is equivalent to the received signal strength, for a received data message (See Page 9 Lines 23-25), and making a rate selection based on counting the number of errors that occur (See Page 9 Lines 23-24).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of IBM and Arjomand with the error counter of Overberg, resulting in the invention of Claim 26, in order to allow faulty nodes on a bus to be taken off the bus and not communicated with, thus preventing said faulty nodes from disrupting communication on the bus (See Column 7 Lines 23-28 of Overberg).

25. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over IBM, Arjomand, and Overberg as applied to Claim 22 above, and further in view of US Patent Number 6,256,358 to Whikehart et al. ("Whikehart").

26. In reference to Claim 23, IBM and Arjomand teach the limitations as applied to Claim 22 above. IBM and Arjomand do not teach a signal strength register for holding a value representative of the level of received signal strength. Whikehart teaches a register for holding a value representative of the level of received signal strength (See Figure 6 and Column 6 Lines 44-46).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of IBM and Arjomand with the signal strength register of Whikehart, resulting in the invention of Claim 22, in order to provide an indicator of signal reception quality (See Column 6 Lines 44-46 of Whikehart).

Drawings

27. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: Figure 1 Number 5. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply

to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Priority

28. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in PCT on 10 April 1999. It is noted, however, that applicant has not filed a certified copy of the PCT/GB00/01341 application as required by 35 U.S.C. 119(b).

29. Acknowledgment is made of applicant's claim for priority under 35 U.S.C. 119(a)-(d) based upon an application filed in PCT on 10 April 1999. A claim for priority under 35 U.S.C. 119(a)-(d) cannot be based on said application, since the United States application was filed more than twelve months thereafter.

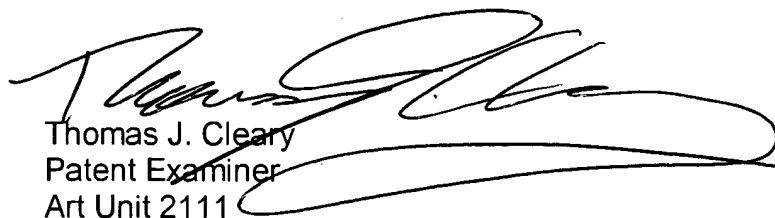
Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas J. Cleary whose telephone number is 703-305-5824. The examiner can normally be reached on Monday-Thursday (7-4), Alt. Fridays (7-3).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark H. Rinehart can be reached on 703-305-4815. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

tjc


Thomas J. Cleary
Patent Examiner
Art Unit 2111


MARK H. RINEHART
SUPERVISOR PATENT EXAMINER
ELECTRONIC BUSINESS CENTER 2100

CLAIMS

1. A method of transmission of data messages between a plurality of stations interconnected by a bus line, wherein each said message includes a frame portion representing content and priority information of the data message and a data portion representing data to be transmitted, the method comprising the steps of causing at least one said station to transmit a data message on to the bus line such that said frame portion thereof is transmitted at a first data transmission rate, and the data portion thereof is transmitted at a second data transmission rate not less than said first data transmission rate, and adjusting said first and/or second data transmission rate in dependence on a signal quality determined for transmission on said bus line.

2. A method according to claim 1, further comprising the step of causing at least one further station to transmit onto the bus line, an acknowledgement signal indicating receipt of a said data message.

3. A method according to claim 2, further comprising the step of causing at least one said station to transmit a further said data message in response to transmission of a said acknowledgement signal.

4. A method according to claim 2 or 3, further comprising the step of re-transmitting a said message if no acknowledgement signal is received.

5. A method according to claim 4, further comprising the step of generating an error message prior to re-transmission of said message.

6. A method according to claim 5, further comprising the step of adjusting said first and/or second data transmission rate in dependence on the frequency of generation of said error messages.

7. A method according to claim 1, further comprising the step of determining the frequency of received data messages comprising an error and adjusting said first and/or

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second data transmission rate in dependence on the frequency of received data messages comprising an error.

8. A method according to claim 7, further comprising determining received signal strength for a data message and adjusting said first and/or second data transmission rate in dependence on said received signal strength determination in combination with said frequency of received data messages comprising an error.

9. A method according to any one of the preceding claims, wherein said frame portion contains information representing a station to which the message is directed.

10. A method according to any one of the preceding claims, wherein the frame portion contains information representing the size of the corresponding data portion.

11. A method according to any one of the preceding claims, wherein the second data transmission rate is an integral multiple of said first data transmission rate.

12. A method of transmission of data messages between a plurality of stations interconnected by a bus line, the method substantially as hereinbefore described with reference to Figures 4 and 5 of the accompanying drawings.

13. Apparatus for transmitting data messages between a plurality of stations interconnected by a bus line, each of said data messages including a frame portion representing content and priority information of the data message and a data portion representing data to be transmitted, the apparatus comprising:

means for transmitting a data message on said bus line such that said frame portion thereof is transmitted at a first data transmission rate, and said data portion thereof is transmitted at a second data transmission rate not less than said first data transmission rate; and

means for adjusting said first and/or second data transmission rate in dependence on a signal quality determined for transmission on said bus line.

14. Apparatus according to claim 13, further comprising means responsive to receiving a data message to transmit an acknowledgement signal on said bus line.

15. Apparatus according to claim 13 or 14, further comprising means responsive to an acknowledgement signal to transmit a further said data message.

16. Apparatus according to any one of claims 13 to 15, further comprising means for re-transmitting a message if no acknowledgement signal is received.

17. Apparatus according to claim 16, further comprising means for generating an error message prior to re-transmission of said message.

18. Apparatus according to claim 17, further comprising means for adjusting said first and/or second data transmission rate in dependence on the frequency of generation of said error messages.

19. Apparatus according to claim 13, further comprising means for determining whether a data message comprises an error.

20. Apparatus according to claim 19, said means for determining whether a data message comprises an error including a Cyclic Redundancy Checker.

21. Apparatus according to claim 20, further comprising an error register for holding a value indicative of the level of received messages comprising an error, and means for decrementing said value for a received data message determined not to comprise an error and incrementing said value for a received data message determined to comprise an error.

22. Apparatus according to claim 13 or any one of claims 19 to 21, further comprising a received signal strength measurement unit for measuring signal strength of a received data message.

23. Apparatus according to claim 22, further comprising a signal strength register for holding a value representative of received signal strength.

24. Apparatus according to claim 21, further comprising processing means for adjusting said first and/or second data transmission rate in dependence on the content of said error register.

25. Apparatus according to claim 23, further comprising processing means for adjusting said first and/or second data transmission rate in dependence on the content of said signal strength register.

26. Apparatus according to claim 25 and 24, said processing means configured to adjust said first and/or second data transmission rate in dependence on the content of said error register and said signal strength register.

27. Apparatus according to any one of claims 13 to 26, wherein said frame portion contains information representing a station to which the message is directed.

28. Apparatus according to any one of claims 13 to 27, wherein the frame portion contains information representing the size of a corresponding data portion.

29. Apparatus according to any one of claims 13 to 28, wherein the second data transmission rate is an integral multiple of said first data transmission rate.

30. Apparatus for transmitting data messages between a plurality of stations interconnected by a bus line, the apparatus substantially as hereinbefore described with reference to Figures 6 and 7 of the accompanying drawings.

31. A computer program comprising computer program means for configuring a processor to operate in accordance with any one of claims 1 to 12.

32. A computer program carrier medium, comprising a computer program according to claim 31.

33. A computer program carrier medium according to claim 32, comprising one of a magnetic storage medium, optical storage medium, solid state storage medium or communications carrier medium.

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